A COMPARISON OF STAGES OF ADOPTION OF EXERCISE AND DECISIONAL BALANCE FOR EXERCISE IN NURSES AND NON-NURSES

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An Abstract of a Thesis by

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The problem. The purpose of this study was to explore the differences in Decisional Balance for Exercise and Stages of Adoption of Exercise between nurses and non-nurses and the investigate the correlation of Decisional Balance for Exercise and Stages of Adoption of Exercise within a group of nurses.

Procedure. The study was an expos facto design. A convenience sample of 93 employees of a rural healthcare facility. The Decisional Balance for Exercise and Stages of Adoption of Exercise tools (Marcus, 1992) were utilized. Demographic data was also collected.

Findings. This study found that there was no significant difference in the Decisional Balance for Exercise in nurses vs. non-nurses. This study also found no significant difference between nurses and non-nurses in their Stages of Adoption of Exercise. However, the study did find a significant difference ($p<0.05$) in Decisional Balance for Exercise scores within the subsample of nurses when the sample was categorized according to the Stage of Adoption of Exercise.

Conclusions. This study suggests that the identification of the Decisional Balance for Exercise in an individual will facilitate movement

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CHAPTER I

Dimensions of the problem

Health care reform presents nurses with a long awaited opportunity (Sherer, 1993). As the delivery of healthcare continues to be extensively transformed, the role of nursing will also undergo major revisions (ANA, 1993). The reform of healthcare will shift the attention to primary and preventive care (Schickler & Johnston, 1987). Under reform, nurses will take a leading role in guiding patients through the newly developed health care system (Sherer, 1993). As outlined in the 1993 "Nursing's Agenda for Health Care Reform" (ANA, 1993), a shift must occur from the predominant focus on illness and cure to attention toward wellness and care.

A primary element of wellness is health promotion (Clark, 1986). Health promotion involves disease prevention and health enhancement (Melvin, 1987), with exercise as a key component. There is more and more evidence that what individuals do with their bodies influences their over-all health more than anything health care workers can do for them once they are ill (Bailey, 1985). Exercise for cardiorespiratory fitness

has a profound impact on wellness and can aid in the prevention and treatment of coronary artery disease, osteoporosis, diabetes, hypertension, and depression (Harris & Associates, Inc., 1989). In addition, fitness and cardiorespiratory fitness exercise have a potential impact on over-all quality of life and well-being of individuals (Woodruff & Conway, 1992).

As cardiorespiratory exercise continues to be recognized as an important factor in over-all health, those assigned the responsibility of motivating individuals to cardiorespiratory fitness training are challenged with two main problems: (1) how to get people to initiate physical activity and (2) how to get active people to maintain their level of activity (Marcus & Simkin, 1993). Despite the potential health benefits of cardiorespiratory fitness training and the fact that roughly 85% of exercise participants report they "feel better" when exercising (Morgan, 1981), fifty percent of individuals who begin an exercise program typically discontinue the program (Dishman, 1988). It is estimated that 30% to 60% of Americans, Canadians, Europeans, and Australians engage in little or no leisure-time physical activity, while only ten

percent of American adults are regularly and rigorously active (Dishman, 1988).

In addressing the public problem of low cardiorespiratory fitness participation, nurses have a special responsibility and are in an ideal position to lead in the promotion of cardiorespiratory fitness training (Macnamara, 1980). Yet, surveys suggest that primary care givers such as nurses are uncomfortable about their ability to properly counsel and advise patients about cardiorespiratory fitness exercise (U. S. Department of Health and Human Services, 1991). Primary care providers including nurses, may be more effective if they are personally involved in a cardiorespiratory fitness program. (U. S. Department of Health and Human Services, 1991). In fact, studies have shown that exercise levels of primary care providers are associated with their exercise counseling practices (U. S. Department of Health and Human Services, 1991). As nurses take action to move toward wellness through cardiorespiratory fitness training in their own lives, not only will they be a visible encouragement to clients and consumers, but they will have a greater potential for being effective motivators and leaders (Clark, 1986). The message sent by

appearance, lifestyle, and habits has a direct impact on a nurse's ability to function as a role model. To remain trustworthy and believable, nurses must practice what they preach (Webster, 1985).

In addition to the benefits that will be experienced by clients, many personal rewards will be reaped by individual nurses who exercise. In a demanding profession such as nursing, where physical and emotional strains can be overwhelming, positive lifestyle practices are essential to achieve maximum personal and professional excellence (Webster, 1985).

The question remains, if nurses truly understand the importance of cardiorespiratory fitness training, do they then participate in cardiorespiratory exercise and do they encourage their clients to also participate in a cardiorespiratory fitness training program.

Overview of Conceptual Basis

Although numerous studies have been conducted to determine exercise relapse (Dishman, 1982), little is known about how to motivate individuals to increase and then sustain cardiorespiratory fitness (Marcus, Rakowski, & Rossi, 1992). The transtheoretical model is a theory of behavior change based on cognitive and social learning constructs (Prochaska & DiClemente,

1982). Various studies have been conducted utilizing this model. The majority of these study have focused on changing problem behaviors (Prochaska, Velicer, DiClemente, & Fava, 1988; Prochaska, Norcross, Fowler, Follick, & Abrams, 1992). Recently, the utility of this theory in motivation to exercise has been recognized (Marcus, Rakowski, & Rossi, 1992).

The transtheoretical model consists of three primary components, two of which will be the focus of this study. The core of the model is a sequence of stages along a continuum of behavioral change from precontemplation, to contemplation, to preparation, to action, to maintenance (Marcus, Rakowski, & Rossi, 1992).

The model also includes a decisional balance component. Decisional balance explores the positive and negative feature of a given choice in an effort to assist the individual in making a decision (Janis & Mann, 1977).

Purpose of the Study

The purpose of this study is to examine whether there are differences in the perceptions of cardiorespiratory fitness training and exercise adoption when comparing a group of nurses and non-

nurses employed in a health care setting. In addition, the perceptions of nurses regarding cardiorespiratory fitness training will be compared to their stage of adoption of exercise.

Definition of Terms

For the purposes of this study, terms are defined as follows:

Decisional Balance for Exercise - comparison of the individual's perception of the Pros (positive) reasons and Cons (negative) reasons to increase one's current level of exercise (Marcus, Rakowski, & Rossi, 1992). Decisional Balance will be measured by the Decisional Balance for Exercise Measure (Marcus, Rakowski, & Rossi, 1992).

Stages of adoption of exercise - a sequence of stages along a continuum of exercise adoption. Stages of exercise adoption include:

Precontemplation - not engaged in exercise and not intending to become involved in exercise in the future

Contemplation - not currently engaged in exercise but considering a change to begin some level of exercise

Preparation - making small changes in level of exercise

Action - actively engaging in regular exercise

Maintenance - sustaining regular exercise adoption for more than 6 months. (Marcus, Rakowski, & Rossi, 1992).

Stage of Adoption of Exercise will be determined by the Exercise Stages of Change Measure (Marcus, Rakowski, & Rossi, 1992).

Cardiorespiratory fitness training - any activity that uses large muscle groups, that can be maintained for a prolonged period, and is rhythmic and aerobic in nature. The intensity of the exercise corresponds to 55 - 90% of the maximum heart rate. Maximum heart rate is measured at the highest exercise intensity attained during a maximal exercise test. Exercise must take place three to five times per week for 15 to 60 minutes each time. Large muscle group activities may include activities as brisk walking, jogging, swimming, aerobic dancing, biking, rowing, etc. (American College of Sports Medicine, 1991). Regular exercise will be determined through self report on the Exercise Stages of Change Measure.

Nurse - a registered nurse or licensed practical nurse working in a selected health care setting. Determination of nurse status will be obtained through a question on the demographic questionnaire.

Non-nurse - any employee other than a registered nurse or licensed practical nurse working in a selected health care facility. Determination of non-nurse status will be obtained through a question on the demographic questionnaire.

Assumptions of Study

For purposes of this study, the following assumptions are defined:

Exercise, as outlined by the American College of Sports Medicine (ACSM, 1991), will improve the overall health and well being of those who participate.

Those who participate in exercise are better promoters of exercise.

Nurses have a basic knowledge of exercise and its benefits.

Nurses are promoters of health.

The respondents were truthful with their replies and the results of the data received is accurate.

Research Hypotheses

The following research hypotheses are posed:

There is a difference between nurses and non-nursing personnel in a health care setting and their Decisional Balance for Exercise scores.

There is a difference between nurses and non-nursing personnel in a health care setting and their Stage of Adoption of Exercise.

There is a difference in Decisional Balance for Exercise scores within a sample of nurses when the sample is categorized according to the Stage of Adoption of Exercise.

Significance of the Study

As nursing takes a lead in healthcare reform, our focus must expand from one of caring for the sick to one of prevention (ANA, 1993). In 1980, the American Nurses' Association's *Nursing: A Social Policy Statement* (ANA, 1980) focused nurses' attention on client self-determination, independence, and choice in decision-making in matters of health. This statement challenges nursing to focus theory and practice on the uniqueness of the client and the responsibility of

individuals for initiating and maintaining positive health behaviors such as exercise (Cox, 1985).

Since the time of Nightingale, nurses have recognized that individual differences motivate health behavior responses and that nurses need to adapt interventions accordingly (Nightingale, 1860). There is no clear or simple answer to the question of why some individuals take an active role in their health, while others do not (Cummings, Becker, & Maile, 1980).

Since nurses spend more time with patients than any other health care professional, they are in a position to influence health behavior (Davidhizar, 1983). To better motivate individuals in the adoption and maintenance of an exercise program, nurses must have an understanding of the process of exercise adoption and of their own beliefs regarding exercise.

CHAPTER TWO

Review of the literature

The literature review will begin by presenting the theoretical framework of Stages of Change and the Decisional Balance Model. Each theory evolved from a model to eliminate addictive behavior to a model for describing the initiation of healthy behaviors, including exercise. Research studies related to each of these models will be presented. The literature review will then conclude with research which includes the integration of the Stages of Change Model and the Decisional Balance Model in determining motivation for exercise.

Progress has been made in the development of a theory to better understand the stages through which individuals move in an effort to change behavior. The model of Stages of Change was proposed initially by Prochaska and DiClemente (1982) as a general model of intentional behavior change. The core of the model is a sequence of stages along a continuum of behavioral change. The stages include:

Precontemplation - not intending to make changes

Contemplation - considering a change

Preparation - making small changes

Action - actively engaging in a new behavior for less than six months

Maintenance - sustaining the change over time (greater than 6 months).

An additional theory which assesses the motivation for behavioral change is the Decisional Balance Model (Velicer, DiClemente, Prochaska, & Brandenburg, 1985). Decisional Balance involves the contemplation and comparison of the perceived positive reasons (Pros) and negative reasons (Cons) for changing a behavior such as exercise (Marcus, Rakowski, & Rossi, 1992).

In an early analysis of the decision-making process, Janis & Mann (1977) proposed a decisional "balance sheet" of incentives which encompassed both the cognitive and the motivational aspects of human planning for future action. Later the Decisional Balance theory was proposed by Janis & Mann (1977) as a method to determine this future action. Unlike decisions that deal with impersonal judgment such as business deals, the Decisional Balance theory was intended for analyzing ego-involving decisions among alternative courses of action. These alternative

courses were viewed by the decision maker as having many different types of benefits, costs, and risks. Janis and Mann (1977) recommended the use of decisional balance sheet with a large number of entries. Each entry represented the anticipated favorable or unfavorable consequences that the decision maker must take into account for each of the alternatives s/he considers.

Through examination of this list of favorable and unfavorable consequences, the decision maker will determine which consequence provides the more favorable outcome. It is not the *absolute* amount of gain or loss s/he expects to encounter that determines the value a person will place on a given choice, but rather the amount relative to a *comparison* level. This comparison level is based on the amount of reward or punishment the person has obtained in the past or has seen other people obtaining. For example, if an individual has witnessed an improved physical and mental condition in someone following the initiation of an exercise program, the individual will view exercise more favorably than if the only experience s/he can relate to exercise is an unfavorable memory of starting a program which failed. An assumption made by the

Decisional Balance theory is that the more the anticipated outcome appears to satisfy the goals or desires of the individual, the more likely the individual will choose that particular course of action. If the individual recognizes that exercise will help them cope with stress more effectively, and coping with stress is currently a problem, the individual will be more likely to establish an exercise program. Likewise, the less the decision conflicts with the desires of the individual, the more appealing the decision appears. If the proposed exercise program does not conflict with other personal obligations, the individual will again be more likely to instigate a program.

There are four main categories of the balance sheet schema:

1. utilitarian gains and losses for self;
2. utilitarian gains and losses for significant others;
3. self-approval or -disapproval; and
4. approval or disapproval from significant others.

These postulates are the basis for the development of the Decisional Balance tools used in various research.

The initial studies involving the Stages of Change and Decisional Balance Models focused on eliminating negative behaviors. One such study, conducted in 1991, investigated the process of smoking cessation (DiClemente, et al 1991). Participants were volunteers from two sites (Texas and Rhode Island) who responded to newspaper, radio, and other media advertisements. There were 691 respondents from Texas with this subsample having the following demographic profile: the mean age was 40, 64% were female, 96% were white, 52% were married, and 93% had a high school or greater education level. Demographics of the 775 Rhode Island subsample were: mean age of 43, 62% female, 98% white, 64% married, and 94% had a high school or greater education level. Participants were divided into appropriate Stages of Change according to their current smoking status. The study focused on those individuals currently in the stages of precontemplation, contemplation, and preparation.

These researchers, utilizing regression procedures on standardized *T* scores, found significant differences

($p<.01$) among the three Stages of Change and Decisional Balance. To assess Decisional Balance the participant completed a 20 - item questionnaire which assessed 10 Pros and 10 Cons of smoking. Respondents were asked to rate agreement with each item on a 5-point Likert scale from (1) *not at all* to (5) *very much*. This study found Precontemplators to hold smoking Pros most important and Preparation subjects to hold Pros least important. Stage assessment revealed cessation activity for the Precontemplation, Contemplation, and Preparation groups consistent with that predicted by the model. The model predicted that Precontemplation would contain the lowest number of quit attempts. As the subjects moved into the higher Stages of Change, there were a greater number of prior quit attempts, the quit attempts in the past year were more frequent, and the percentage not currently smoking at pretest was higher.

In 1992, Marcus, Selby, Niaura, and Rossi conducted a three part study using two theoretical models, the stages of change model and self-efficacy theory. One aim of the study was the development of a tool to measure the stages of change for exercise behavior. This measure was based on the measure developed for smoking cessation (Prochaska &

DiClemente, 1983). Questions were modified to describe exercise behavior.

In Study I, a four item measure placed respondents into either the Precontemplation, Contemplation, Action, or Maintenance stage. A five point Likert scale was used to rate each item: 1 indicated "strongly disagree" and 5 "strongly agree." Subjects were placed in the stage corresponding to the item they endorsed most strongly (agree or strongly agree).

Frequency counts were used to determine the distribution of individuals in the various stages of change of exercise behavior. No significant relationship was found between demographic variables and the stage of exercise behavior. The results indicated a clustering of subjects in the Action and Maintenance stages. As a result, it was considered that the four-stage measure used in this study did not adequately describe the sample. It was determined that the further definition of the stages of Action and Maintenance and the possible addition of a stage would be helpful. Adding a time referent to the items and subdividing the Action stage was considered.

Study II was conducted for instrument refinement. The procedure used in Study I was repeated with

modifications to the instruments. The four item stages of change measure was expanded to five items to represent Precontemplation, Contemplation, Preparation, Action, and Maintenance. The definitions of Precontemplation and Contemplation remained the same with modification to the remaining stage definitions. Preparation was defined as not only considering participation in exercise but actual participation in a limited amount of physical activity. Action was defined as recent involvement in regular physical activity as recommended by the American College of Sports Medicine (ACSM, 1991). Maintenance was defined as participation in regular physical activity for at least six months. As a result of the changes in the instrument, respondents were more evenly dispersed across the stages of change, with the fewest number falling in the Precontemplation stage (7.3%).

Study I and Study II were followed by a third study. Study III consisted of instrument reliability as discussed with the development of the instrument.

Marcus, et al (1992) changed the focus of the Stages of Change from unhealthy to healthy behaviors. In this study, the Stages of Change Model was utilized to design an exercise intervention for community

volunteers. The study consisted of 610 adults aged 18 to 82. Seventy-seven per cent of the participants were female and the average age was 41.8 years. The city in which the study was conducted supported a population of 72,000.

The "Image Action" campaign, as it was called, was a community-wide event which enrolled participants in a six-week intervention program. Community members received a program description explaining that this program was designed to encourage participation in physical activity.

Upon expression of interest in the program, registrants received a campaign registration form. A single question, which was formulated to assess current stage of exercise adoption, was included on the campaign registration form along with various demographic data. The question to assess stage of exercise requested the registrant select the one item which best described them. The items were: 1) I'm not very active, I don't exercise, and I don't plan to start (Precontemplation); 2) I've been thinking about being more active, but I just can't get started (Contemplation); 3) I exercise once in a while, but I could do more (Preparation); and 4) I've started

exercising regularly, but it's tough to keep it up (Action). Demographic data included questions regarding subject name, address, telephone number, birth date, and gender. It was assumed that subjects in the Maintenance stage would not enroll in an intervention program for non-exercisers, so a Maintenance question was not asked.

Interventions incorporated into the program included written materials designed to encourage participants to start or increase physical activity, a resource manual describing activity options in the community, and weekly "fun walks" and "activity nights." The interventions presented were specifically designed for the various stages of change in exercise. A Stuart-Maxwell test for correlated proportions indicated that subjects were significantly more active after the six-week intervention ($p<.0001$). Sixty-two percent of participants in Contemplation became more active either advancing to Preparation or Action, while 61% in Preparation became more active.

In another study published in 1992, Marcus, Rossi, Selby, Niaura, and Abrams, looked at both the stages and processes of exercise adoption. Subjects included 1,172 male and female employees of two worksites, a

retail outlet and an industrial manufacturer. The demographic profiles of each worksites were similar. Approximately 66% of the subjects were female, the average age was 37.2 years, and the average number of years of education was 12.3. Ninety-three percent of the sample was white, 50% were married, and 30% were smokers.

Following the completion of five questions designed to assess current stage of exercise behavior, subjects were classified into one of the five stages of exercise adoption: precontemplation, contemplation, preparation, action, and maintenance. The researcher found females more likely than males to be in the contemplation and action stages and less likely to be in the maintenance stage ($p<.001$). There was a tendency to be in an earlier stage of adoption for older subjects ($p<.001$) and for those with lower levels of education ($p<.05$). There was no relationship between stage of adoption and smoking status, ethnic status, total family income, or occupational category.

This study demonstrated the usefulness of the model of stages of change when applied to exercise behavior. Approximately two thirds of this predominantly female population were not exercising

regularly, and nearly 25% did not intend to begin exercising in the next 6 months. Only 20% of the sample had engaged in regular exercise for more than six months. The implication is made that programs designed to increase activity levels will have to accommodate the large percentage of individuals who are not ready to change their exercise behavior.

In 1993, Marcus and Simkin again examined the utility of the Stages of Change Model in relation to exercise. A Stages of Change questionnaire was administered to 235 employees at two worksites, a retail outlet and an industrial manufacturer. The respondents were classified in the five stages described in the earlier studies, Precontemplation, Contemplation, Preparation, Action and Maintenance.

Employees in this study were then asked to complete the 7-day Physical Activity Recall (PAR) questionnaire. Through this self-report measure, individuals are asked to describe in detail their activity level in terms of moderate and vigorous activity. Based on this information, subjects were placed into one of the five Stages of Adoption of Exercise. To assist in the interpretation of data, the Stages of Adoption of Exercise were collapsed from five

into three categories (Precontemplation/Contemplation, Preparation, and Action/Maintenance). Because individuals in Precontemplation and Contemplation were currently sedentary while individuals in Action and Maintenance only differed in the length of time they had engaged in regular activity, the researchers determined that it was logical to condense the five groups into three.

A one-way analysis of variance (ANOVA) was performed to assess the relationship between the Stages of Adoption of Exercise and reported time spent in moderate and vigorous physical activity. Subjects in Action/Maintenance reported significantly more minutes of vigorous activity than subjects in Preparation and Precontemplation/Contemplation ($p<.001$). The difference between Preparation and Precontemplation/Contemplation was also significant ($p<.001$).

Lee (1993) also examined Stages of Change and exercise. The study conducted in Australia, used telephone survey methods to identify psychological variables that distinguish women at various Stages of Change with regard to exercise and to determine possible interventions. Women 50 to 64 years of age

were selected on the assumption that this age group would be unlikely to have major child care responsibilities but still be likely to be active and healthy and, thus, appropriate targets for exercise intervention.

One hundred women in this age group were randomly selected from electoral rolls (voter registration is mandatory for all adult citizens in Australia). Of those selected, 399 were successfully interviewed by phone and 113 refused to participate. Because of other barriers to interviewing, complete data was obtained from 286 women.

Respondents were placed into four stages of exercise. The Preparation Stage identified in other studies of the Stages of Change was not utilized in this study. Those who did not meet the activity criterion in the previous week and who reported no interest in increasing their level of exercise were classified as precontemplators. Those who indicated that they would like to exercise more but had not met the criterion in the preceding week were classified as contemplators. Those who met the criterion were classified as action/maintenance. Eighteen could not be classified due to missing data.

Precontemplators were significantly older (p=.012) and had significantly lower exercise knowledge (p=.002) than those in Contemplation and those in the Action stage. Precontemplators had lowered perceived psychological benefit (p=.036) and lower family support (p=.05) than their Action counterparts. Further investigation is needed into the attitudes of family members toward mothers, wives, and homemakers taking time for exercise or other leisure activity.

In 1992, a study was published in which two industrialized countries were compared with regard to exercise. In this study, Marcus and Owen (1992) utilized three theoretical models of exercise-related behavior: (a) Stages of Change, (b) self-efficacy, and (c) Decisional Balance.

Studies were conducted at two sites. Study One (the U.S.A. sample) consisted of 1093 employees at four Rhode Island worksites. Study Two (the Australia sample) was comprised of 801 employees taking part in an Australian worksite health promotion project.

In both studies, subjects were asked to complete the Stages of Change measure, a 5-item self-efficacy measure, and a 6-item Decisional Balance measure. The relationships between the Stages of Change measure and

the Self-Efficacy and Decisional Balance Measures were analyzed. The association between demographic variables and Stage of Change was also analyzed.

In both Study One and Study Two, the scores on the Decisional Balance scales were significantly related to the Stages of Change process ($p<.001$). The Precontemplators had relatively lower Pros, higher Cons, and lower Decisional Balance scores. Those in Maintenance had relatively higher Pros, lower Cons, and higher Decisional Balance scores.

Marcus, Rakowski, & Rossi (1992) conducted an additional study that examined the Stages of Change and its relationship to Decisional Balance. In an attempt to measure this relationship, the authors developed a scale representing the positive (Pros) and negative (Cons) aspects of exercise. Four work-sites were utilized for the study - a retail outlet, an industrial manufacturer, a government agency, and a medical center. A total of 778 male and female employees from the four worksites participated. Data was collected as a part of the normal follow-up survey upon enrollment in the health promotion program at the worksite. Volunteers then completed a three part questionnaire -

the Decisional Balance Measure, the Stages of Adoption of Exercise Measure, and demographic information.

Sample demographics were as follows: 54% were female, the average age was 41.5 years, average years of education were 13.5 years, 95% of the subjects were White, and 70% were married. Median annual household income was $35,000, with 70% of the respondents holding white-collar positions. Although demographic data of this sample was obtained, analysis was not presented regarding education level, age, marital status, or income and Stage of Exercise or Decisional Balance.

Responses for the remaining sections of the questionnaire, Decisional Balance for Exercise Measure, and Stages of Adoption of Exercise Measure were analyzed and compared. The Pros and Cons indices were converted to T scores (M=50, SD=10) to provide a standard metric for analyzing the raw scores (Hinkle, Wiersma, & Jurs, 1988). A Decisional Balance score was created by subtracting total t-scores from the Cons questions from those of the Pros. Responses for the 16 item Decisional Balance Measure were compared to the Stages of Adoption of Exercise using a one-way analysis of variance.

Analysis showed Pros (positive exercise) scores significantly higher for subjects in the Maintenance stage for exercise compared to those in the Precontemplation and the Contemplation stages ($p<.0001$). Pros scores were also higher for those in the Action stage compared to Precontemplation stage, Contemplation stage, and Preparation stage ($p<.0001$). The Preparation and the Contemplation stages showed higher Pros scores compared to Precontemplation stage ($p<.0001$). The reverse was true for the Cons (negative) scale ($p<.0001$). Thus, the Cons scores were lower in the Action and Maintenance stages and higher in the Precontemplation and Contemplation stages.

Summary

The literature presents not only the progression of research on the Stages of Change and Decisional Balance theories, but the usefulness of this information as well. As seen in the literature review, individuals are easily categorized into various Stages of Adoption of Exercise. Likewise, individuals have definitive ideas with regard to the usefulness of an exercise program. Through identification of the individual's stage of exercise and the level of positive or negative perceptions of exercise,

interventions can be appropriately formulated to motivate the individual to increase or maintain his/her level of exercise. This study was designed to extend the research on Stages of Change and Decisional Balance and relate this information to nurses' perception of exercise and their actual level of participation in exercise.

CHAPTER III

METHODOLOGY

Design

To determine whether there is a difference between nurses and non-nurses and their Decisional Balance for Exercise and their Stage of Adoption of Exercise, health care employees completed a questionnaire to determine their Decisional Balance for Exercise score and their Stage of Adoption of Exercise. A non-experimental design was used to gather data for this ex post facto study.

Sampling Method

Subjects consisted of the employees of a 52 bed acute care facility with an attached 80 bed long term care and public health service. The facility was located in a rural setting in central Iowa. The workforce was composed of professional staff including nursing, management and social services; technical staff including laboratory technicians, radiology technicians, cardiopulmonary and physical therapy technicians; and support staff including housekeeping, laundry, dietary & environmental services. These employees consisted of males and females with a variety

of educational levels. The staff was composed of 72 nurses and 158 non-nurses. All employees were invited to participate in this study.

The 230 employees at the medical center are eligible for and receive notices of all worksite health promotion activities. Previous activities related to exercise have included a team walking contest and jazzercise class.

Protection of Human Subjects

Participation in this study was voluntary. All individuals had the right to refuse to participate. Refusal to participate in this study did not affect the individual's performance evaluation or employment status. Responses were confidential and only the researcher knew the coding system. Subjects received a cover letter (see Appendix A) explaining the purpose of the study and that consent would be implied through completion and return of the questionnaire. The cover letter stated that participation was voluntary and participants had the right to refuse to participate without suffering any repercussion in their employment. The letter included information regarding the confidential manner in which all responses were maintained.

Any individual employee information obtained in connection with this study remained confidential. All information was presented as aggregate data without identification of individual employees.

Data Collection Tools

The tool used in this study was composed of the Decisional Balance for Exercise Measure and the Exercise Stages of Adoption of Exercise Measure both developed by Marcus, Rakowski, and Rossi (1992) (see Appendix B), and a demographic questionnaire developed by the researcher (see Appendix B). Permission to use the Decisional Balance and Stages of Adoption questionnaire was received from the author (see Appendix B). The original Decisional Balance for Exercise Measure contained 75 statements reflecting the positive (Pros) and negative (Cons) aspects of exercise (Marcus, Rakowski, & Rossi, 1992). The original statements were generated by a small group of male and female regular exercisers and non-exercisers, including researchers and laypersons. The statements were then reviewed and revised by Marcus, Rakowski, & Rossi (1992). The final pool of items contained 40 items equally divided between Pros and Cons. Seventeen items (3 Pros, 14 Cons) were later eliminated from the

Decisional Balance questionnaire due to excessive positive or negative responses. The remaining 23 items underwent a principal-components analysis with a varimax rotation. Following rotation, an item was judged to be important for a component if there was a component loading of .50 or greater and if the item did not load on another component.

The final questionnaire was comprised of 16 items, 6 Cons and 10 Pros. Coefficient alpha (internal consistency) reliabilities were satisfactory (Cons=.79, Pros=.95). This final questionnaire asked subjects to indicate, on a 5-point Likert scale ranging from *not at all important* (1) to *extremely important* (5), how important each of the sixteen statements were with respect to the respondent's decision to exercise or not to exercise. In order to provide a standard metric, the Pros and Cons indices were converted to T scores. The raw scores were converted to *z* scores to allow for comparison between groups of questions. The z score was obtained by subtracting the mean from the raw score and dividing the result by the standard deviation. By converting to *z* scores, the distribution of scores was the same as that of the raw scores but a mean of 0 and a variance and standard deviation of 1 was present. A

negative z score indicated that the raw score was below the mean; a positive *z* score indicated that the raw score was above the mean; a *z* score of 0 indicated that the raw score was equal to the mean (Hinkle, Wiersma, & Jurs, 1988). To allow for easier interpretation and more precise reporting of scores (Hinkle, Wiersma, & Jurs, 1988), the *z* was then transformed into a T score for each of the sixteen items of the Decisional Balance for Exercise measure. A mean of 50 and a standard deviation of 10 was chosen. Each *z* score was multiplied by 10 (the standard deviation) and 50 (the mean) was added. This eliminates negative scores. A mean score was calculated on the T-score for the 10 Pros items. Scores were based on a 5-point Likert scale for the Pros items answered (Item 1, item 2, item 4, item 5, item 6, item 8, item 9, and item 10). A mean was then calculated on the T-score for the six Cons items (Item 3, item 7, item 11, item 13, item 15, and item 16). The difference of the mean Pros and the mean Cons score was then computed (Pros - Cons) and resulted in the individual's Decisional Balance for Exercise score.

The Stages of Adoption of Exercise Measure consisted of five statements (see Appendix B). The

participant was asked to mark each statement true or false. Item one stated *I currently do not exercise*, 2 stated *I intend to exercise in the next 6 months*, 3 stated *I currently exercise regularly*, 4 stated *I have exercised regularly for the last 6 months*, and item 5 stated *I have exercised regularly in the past for a period of at least 3 months*. A True answer was assigned the value of 1 and False was assigned a value of 2. Scoring for the Exercise Stage of Change was as follows:

If (Item 1 = 1 and Item 2 = 2) --> Stage = Precontemplation

If (Item 1 = 1 and Item 2 = 1)--> Stage = Contemplation

If (Item 1 = 2 and Item 3 = 2)--> Stage = Preparation

If (Item 1 = 2 and Item 3 = 1 and Item 4 = 2)--> Stage = Action

If (Item 1 = 2 and Item 3 = 1 and Item 4 = 1)--> Stage = Maintenance

Item 5 was not used in the scoring to determine current stage of exercise. Item 5 was included with the intention that it may be used in future studies to investigate the tendency for individuals who have

previously exercised to resume exercise. It was felt that subjects who had previously exercised for greater than 6 months would be likely to resume an exercise regimen at a later date.

When the Stages of Adoption of Exercise Measure was tested on 20 subjects, the Kappa index of reliability over a 2-week period was .78 (Marcus, Selby, Niaura, & Rossi, 1992) Concurrent validity for this measure has been demonstrated by the correlation of reported Stage of Exercise and reported exercise with the Seven Day Recall Physical Activity Questionnaire (Marcus & Simkin, 1993).

The demographic questionnaire was developed by the researcher. Information requested included gender, age, education level, and position as a nurse or non-nurse (see Appendix B).

Data Gathering Procedure

Following approval from the Human Subjects Research Review Subcommittee of the Drake University Senate (see Appendix C), the Decisional Balance for Exercise Measure, Stages of Adoption of Exercise Measure, and the demographic questionnaire was distributed to all medical center employees with their pay check. Permission had also been obtained from the

administration of the medical center to conduct this study and to distribute the questionnaires in this manner (see Appendix D).

Questionnaires were coded according to department, job classification, and individual employee in each department. Employees were listed alphabetically according to department and then assigned a number. Job classifications used are found in Appendix E. Departments were coded by letter and employees by number. The letter/number code for job classification, department, and employee was found in the upper right hand corner of the questionnaire. Employees were asked to complete the questionnaire and return it within one week to a locked box located by the telephone in the cafeteria.

Employees received a cover letter from the organization's administration explaining that they were invited to participate in a study about health promotion at the worksite (see Appendix A). Consent was implied through completion and return of the questionnaire. Employees were given one week to complete and return the questionnaire.

One week after initial distribution, a second letter was sent to employees who failed to return their

questionnaires (see Appendix A). These reminders were distributed to the individual employee through the departmental mailboxes. Employees were again given one week to return the completed questionnaire to a locked box in the medical center cafeteria. The sample was composed of those individual who completed the questionnaire within this two week period.

Analysis of Data

Demographic data was summarized and is presented in table format. The Decisional Balance for Exercise Measure scores were analyzed using an independent t-test to determine if there was a difference in nurses and non-nursing personnel and their Decisional Balance for Exercise. A Chi-square was used to compare the difference between nurses and non-nursing personnel and their Stage of Adoption of Exercise. The difference in Decisional Balance for Exercise scores in the sample of nurses when categorized by the Stage of Adoption of Exercise was analyzed using a one-way analysis of variance (ANOVA).

Chapter IV

Findings

The purpose of the study was to determine if there is a difference between nurses and non-nurses and their perception of the benefits of exercise and their actual level of participation in exercise.

The results of this study are discussed in four sections. First, a description of the participants in the study will be presented. This will be followed by a description of the nurse and non-nurse subsample responses to Stages of Adoption of Exercise and their Decisional Balance for Exercise scores. The third section presents the results of the statistical analysis for hypothesis testing.

Description of the Sample

Of the 210 employees in this rural healthcare facility, 93 completed and returned the questionnaire resulting in a return rate of 40.4%. As can be seen in Table 1, the sample was predominantly female.

Table 1

Gender of the Subjects in the Study (N=93)

Gender	Nurse	Non-nurse	%
Male	1	8	10
Female	39	45	90

Table 2 displays the age breakdown of the sample. The distribution was similar between nurses and non-nurses with the youngest respondents being non-nurses. The majority of respondents in both groups, 66.7%, were between the ages of 26 and 45 years of age.

Table 2

Age of the Subjects in the Study (N=93)

Age	Nurse	Non-nurse	Total
18-25	0	5	5
26-35	10	12	22
36-45	19	21	40
46-55	7	9	16
56-65	4	4	8
>66	1	0	1
No Response	0	1	1

Level of education was markedly different between the group of nurses and non-nurses. This breakdown is presented in Table 3.

Table 3

Education Level of Subjects in the Study (N=93)

Education Level	Nurse	Non-nurse	Total
Some High School	-	3	3
Completed High School	-	19	19
Some College	10	18	28
Completed College	26	7	33
Some Graduate	1	1	2
Graduate Degree	5	1	6
No Response	0	2	2

The nurse group did not respond consistently to the question of education level. Those nurses who had completed an associate degree or diploma in nursing varied in their responses to the question of education level. Some responded as "completed college" and some as "some college". This information was obtained from a space provided on the demographic section of the questionnaire which asked for college major. Thirty-

two of the respondents specified the degree obtained while the remainder did not. Table 4 displays the breakdown of nursing educational preparation of the nurse respondents.

Table 4

Educational Preparation of the Nurse Sample (N=44)

Educational Preparation	Number of Respondents
LPN	2
ADN	11
Diploma	4
Baccalaureate	6
Masters	4
Did not specify	12

Table 5 depicts the Stages of Adoption of Exercise for the total sample. It can be seen that the highest response rate was for individuals who were in the Maintenance Stage.

Table 5

Stages of Adoption of Exercise Total Sample (N=93)

Stage of Change	Frequency	Percent
Precontemplation	8	8.6
Contemplation	18	19.4
Preparation	12	12.9
Action	11	11.8
Maintenance	36	38.7
No Response	8	8.6

Table 6 presents the results of the Stages of Adoption of Exercise for the nurse and non-nurse subsamples who responded to the questions. The non-nurse subsample had the highest response rate in the Contemplation stage. The nurse subsample has even distribution in the Contemplation, Preparation, and Action phases and much lower numbers in the Precomtemplation phase.

Table 6

Distribution of Sample in Stages of Adoption of Exercise (N=85)

Stage	Nurse	Non-nurse
Precontemplation	3 (8.3%)	5 (10.2%)
Contemplation	7 (19.4%)	11 (22.4%)
Preparation	7 (19.4%)	5 (10.2%)
Action	6 (16.7%)	5 (10.2%)
Maintenance	13 (36.1%)	23 (46.9%)

Decisional Balance Results

The sixteen questions comprising the Decisional Balance for Exercise measure elicited some very positive responses to some questions and very negative to others. As can be seen in Table 7, the two questions which showed the highest mean for the entire sample was Question 2, "Regular exercise would help me relieve tension" and Question 6, "I would feel good about myself if I kept my commitment to exercise regularly." The lowest mean was found in Question 11, "I feel uncomfortable when I exercise because I get out of breath and my heart beats very fast."

Table 7

Responses to Decisional Balance for Exercise Questions for the Total Sample

Variable	Mean	Std Dev	Label
Ques 1	3.85	.95	More Energy
Ques 2	4.04	.93	Relieve Tension
Ques 3	2.15	1.25	Too Tired
Ques 4	3.65	1.12	More Confident
Ques 5	3.84	1.05	Sleep Soundly
Ques 6	4.07	1.03	Feel good about self
Ques 7	2.57	1.24	Bad weather affects
Ques 8	3.97	1.09	Like body better
Ques 9	3.71	1.13	Easier to perform tasks
Ques 10	3.87	1.04	Less Stressed
Ques 11	2.04	1.21	Feel uncomfortable
Ques 12	3.76	1.14	More comfortable with body
Ques 13	2.28	1.07	Takes too much time
Ques 14	3.76	1.08	Positive outlook
Ques 15	2.14	1.17	Less time for family
Ques 16	2.60	1.16	Too exhausted

The Decisional Balance for Exercise mean score was calculated for the subsample of nurses and non-nurses. Appendix F presents the Decisional Balance for Exercise T scores for the individual nurse respondents. Decisional Balance T scores ranged from -22.98 to 21.88. The Decisional Balance for Exercise T scores for the non-nurse subsample is presented in Appendix G. Scores for this group ranged from -18.55 to 21.88. The Decisional Balance T scores for the total sample ranged from -50.11 to 21.88. Because of the wide range of Decisional Balance scores, the mean for the nurse and non-nurse subsamples were -1.2830 and 1.0492 respectively as shown in Table 8.

Table 8

Mean Decisional Balance Scores for Total Sample

	Number of Subjects	Mean Decisional Balance	Standard Deviation
Nurses	40	-1.28	13.282
Non-Nurses	52	1.05	9.696

Results of Statistical Analysis

Hypotheses 1 stated that there is a difference between nurses and non-nursing personnel in a health care setting and their Decisional Balance for Exercise scores. Table 9 depicts the results of the independent t-test used to analyze, the difference between the nurse and non-nurse subsamples and their Decisional Balance for Exercise mean T score. Although the mean of the nurse subsample was less than that of the non-nurse subsample no significant differences between the groups was found (Table 9). Therefore, the hypothesis is not supported.

Table 9

Results of Independent t-test Comparing Decisional Balance Between Nurses and Non-nurses

	N	Mean	SD	df	t	p
Nurse	40	-1.28	13.23			
				68.70	-.94	.35
Non-nurse	52	1.05	9.70			

*p<.05, **p<.01

Hypothesis 2 states that there is a difference between nurses and non-nursing personnel in a health care setting and their Stage of Adoption of Exercise. In testing of hypothesis 2, nurses and non-nurses were compared utilizing a Chi-square. There was no significant difference in the Stage of Adoption of Exercise between nurses and non-nurses. As shown in Table 10, distribution of respondents was similar in both groups.

Table 10

Chi Square Distribution of Sample in Stages of Adoption of Exercise

	Nurse	Non-nurse	Chi-square	df	p
Stage of Exercise			2.46	4	.65
Precontemplation	3	5			
Contemplation	7	11			
Preparation	7	5			
Action	6	5			
Maintenance	13	22			

*p<.05, **p<.01

Hypothesis 3 states there is a difference in decisional Balance for Exercise scores within a sample of nurses when the sample is categorized according to the Stage of Adoption of Exercise. This final analysis involved only the sample of nurses and investigated the difference in Decisional Balance for Exercise scores when categorized according to the Stages of Adoption of Exercise. Nurses were categorized according to their response to the Stages of Adoption of Exercise measure. Using a one-way analysis of variance (ANOVA), the various scores for the Stages of Adoption of Exercise were compared to the scores for Decisional Balance for Exercise within the subsample of nurses. The results showed significance ($p<.05$) in several areas.

Table 11

Analysis of Variance for Decisional Balance for Exercise for Nurses

Source	D.F.	SS	MS	F Ratio	P Value
Between Groups	4	1663.02	415.76	6.57	.0006**
Within Groups	31	1961.17	63.26		
Total	35	3624.19			

*p<.05, **p<.01

Table 12 displays the various pairs of Stages of Adoption of Exercise groups which were significantly different in their Decisional Balance (DB) Scores. Significance was found in the following groups utilizing Scheffe's method for a 95% confidence level.

Table 12

Pairs of Nurse Groups with Significantly Different DB

		Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
Mean	Group	1	2	3	4	5
-13.7735	Grp 1					
-8.3876	Grp 2					
-5.0511	Grp 3					
2.9336	Grp 4	*	*			
5.7103	Grp 5	*	*	*		

* Denotes pairs of groups significantly different at the 0.05 level

Additional Analysis

In addition to hypothesis analysis, other aspects of Decisional Balance for Exercise and their relationship to Exercise Stages of Adoption of Exercise were investigated. As can be seen in Table 13, the mean Decisional Balance scores were lowest in the Precontemplation stage and highest in the Maintenance stage. The Action and Maintenance stages showed a higher Decisional Balance score than did the Precontemplation and Contemplation stages. Maintenance indicated a higher Decisional Balance than Precontemplation, Contemplation, and Preparation stages. A higher Decisional Balance for Exercise score was seen with each higher level of exercise adoption.

Table 13

Means and Standard Deviations of the Pros, Cons, and Decisional Balance Scales by Stage of Exercise Adoption

	Precontemplation		Contemplation		Preparation		Action		Maintenance	
Scale	M	SD	M	SD	M	SD	M	SD	M	SD
Pros	33.37	.76	44.15	7.21	48.90	6.59	50.65	4.91	53.44	6.31
Cons	47.15	4.56	52.54	5.26	53.95	4.65	47.71	3.04	47.73	5.54
DB	-13.77	3.87	-8.39	11.03	-5.05	7.48	2.93	7.73	5.71	6.88

Table 14, shows Pros scores were higher in the Contemplation, Preparation, Action, and Maintenance stages than in the Precontemplation stage. The Maintenance stage showed a higher Pros score than both the Precontemplation and Contemplation stages.

Table 14

Mean Pros Scores for Nurses

Group	# of cases	Mean	SD
Precontemplation	3	33.37	.761
Contemplation	7	44.15	7.21
Preparation	7	48.90	6.59
Action	6	50.65	4.91
Maintenance	13	53.44	6.32

Using an ANOVA, some significant differences were found with the Pro score and Stages of Adoption of Exercise scores as seen in Table 15.

Table 15

Analysis of Variance of Mean Pro Score for Exercise for Nurses

Source	D.F.	SS	MS	F Ratio	P Value
Between Groups	4	1164.61	291.15	7.69	0.0002**
Within Groups	31	1173.32	37.85		
Total	35	2336.93			

*p<.05, **p<.01

Table 16 displays where these differences in the Pros mean scores within the group of nurses are found.

Table 16

Significantly Different Pairs of Pros Scores

		Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
Mean	Group					
33.3727	Grp 1					
44.1530	Grp 2	*				
48.8966	Grp 3	*				
50.6516	Grp 4	*				
53.4414	Grp 5	*	*			

In analyzing the Cons scores in the various Stages of Adoption of Exercise, there was again a significant difference ($p<.05$). As seen in Table 17, the Contemplation and Preparation stages showed a higher mean Cons score (M = 52.54 and M = 53.95, respectfully) than did those in the Maintenance stage (M = 47.73).

Table 17

Mean Cons Scores for Nurses

Group	# of cases	Mean	SD
Precontemplation	3	47.15	4.56
Contemplation	7	52.54	5.26
Preparation	7	53.95	4.65
Action	6	47.72	3.04
Maintenance	13	47.73	5.54

Using an ANOVA, some significant differences were found when comparing the Con score and Decisional Balance scores (Table 18).

Table 18

Analysis of Variance of Mean Con Score for Nurses

Source	D.F.	SS	MS	F Ratio	P Value
Between Groups	4	275.76	68.94	2.85	.0406*
Within Groups	31	751.34	24.24		
Total	35	1027.1			

*p<.05, **p<.01

Table 19 displays where these differences in mean Cons score are found within the subsample of nurses.

Table 19

Significantly Different Pairs of Cons Scores

		Grp 1	Grp 2	Grp 3	Grp 4	Grp 5
Mean	Group					
47.1462	Grp 1					
47.4180	Grp 2					*
47.7311	Grp 3					*
52.5406	Grp 4					
53.9477	Grp 5					

*p<.05, **p<.01

Chapter V

Discussion of findings

The purpose of this study was to investigate nurses and non-nurses regarding their attitude toward exercise and their actual participation in exercise. Specifically, the three areas investigated were if there is a difference between nurses and non-nursing personnel in a health care setting and their Decisional Balance for Exercise score, if there is a difference between nurses and non-nursing personnel in a health care setting and their Stage of Adoption of Exercise, and if there is a difference in Decisional Balance for Exercise scores based on Stage of Adoption of Exercise within a sample of nurses. While this investigation provided encouraging results in relating Stages of Adoption of Exercise to Decisional Balance for Exercise, the findings suggest there is no difference between nurses and non-nurses and their beliefs in the benefits of exercise or their level of participation.

This researcher found there to be no significant difference between nurses and non-nurses and their Decisional Balance for Exercise scores. However, the mean Decisional Balance score for nurses was actually

lower. This would indicate that nurses have no more positive perceptions toward exercise than non-nurses. Without a strong belief in the benefits of exercise, it is difficult for nurses to provide the counselling and role modeling needed to promote this important health activity.

In a study conducted by Marcus and Owen (1992), Decisional Balance was determined on a study sample from the USA and a sample from Australia. The Decisional Balance scores of the Australian sample were slightly more positive in the Contemplation and Preparation stages, while the Decisional Balance scores of the USA sample were more positive in the Precontemplation, Action, and Maintenance stages. The nurse subsample in this study showed similar results. The one stage which differed in score results was the Preparation stage. The USA and Australian subsamples presented with a Decisional Balance score of 0.72 and 1.12 respectfully in the Preparation stage. The Preparation stage Decisional Balance score in the nurse subsample was -5.05, considerably less positive. In the Australian sample, 12% of the respondents were women and 72% had at least a high school education. In the USA sample, 52% were women and 94% had at least a

high school education. The demographics of the USA sample were more consistent with those of the nurse sample.

Studies were not found regarding health professionals and Decisional Balance. While much is written about the benefits of exercise, little is published regarding nurses and their attitude toward exercise and their beliefs in these benefits.

The second hypothesis resulted in no significant difference between nurses and non-nurses and their Stages of Adoption of Exercise. Although more nurses (15%) fell into the Maintenance Stage than into other stages, this was a lower percentage than the non-nurse subsample (20%) in the Maintenance stage.

Previous studies indicated respondents most frequently fell into the Contemplation Stage and least frequently in the Preparation Stage (Marcus, Rossi, Selby, & Niaura, 1992) and Action Stage (Marcus & Simkin, 1993). The breakdown of nurses and non-nurses in the five Stages of Adoption of Exercise was similar in each stage with both groups having the highest percentage in Maintenance. Despite the presumed exposure to the benefits of exercise and the adverse affects of lack of exercise, nurses establish an

exercise routine no more often than non-nurses. Although two previous studies had utilized samples from different settings, neither used a healthcare setting. No research was found utilizing a healthcare sample in studies of Stages of Adoption of Exercise.

A significance difference was found in the comparison of Decisional Balance for Exercise and Stages of Adoption of Exercise. The Decisional Balance scores were lowest in the Precontemplation stage and highest in the Maintenance stage. This indicates those who actively partake in exercise also possess a stronger belief in the benefits of exercise. Previous studies involving the Decisional Balance for Exercise and Stages of Adoption of Exercise have resulted in similar findings. In a study conducted by Marcus and Owen (1992), Precontemplators had relatively lower pro, higher con, and lower Decisional Balance scores, whereas those in Maintenance had relatively higher pro, lower con, and higher Decisional Balance scores.

The correlation between Decisional Balance for Exercise and the Stages of Adoption of Exercise indicates the need for interventions to be aimed at increasing the participants positive perceptions (Pros) and decreasing the negative (Cons). These intervention

may assist them in moving through the various Stages of Adoption of Exercise until the goal of Maintenance is reached.

Limitations of study

One limitation of the study was the weather experienced in the Mid-west and its influence on exercise. Because this study was conducted in the spring when the weather was more conducive to outside activities, there may have been greater participation in exercise. There may be more respondents in the Contemplation, Preparation, and Action stages during the warm weather months. In addition, the location in which the study was conducted did not have an indoor exercise facility. If the study had taken place in an area in which such a facility was available, the weather may not have played a significant role in whether the individual exercised.

Another limitation may be that the medical center's employee wellness program conducted a group walking program during the months of May and June. Teams of individuals competed for prizes for the most miles accumulated. Approximately forty medical center employees participated in this contest. Due to the

recency of this program, more employees may have been in the Action stage.

Because the entire study sample was made up of the personnel of a health care facility, this may have presented a limitation. The influence and expectations of being an employee in a health care organization may have an influence on perception of and participation in wellness.

Respondents of the questionnaire were a convenience sample and may have been more motivated toward exercise. Those individuals who actively exercise may have been inclined to respond to the questionnaire.

Since the Stages of Adoption of Exercise was measured through self-report, this may present a limitation. However, this tool has been tested for reliability and found to be reliable. This may indicate the need for further reliability testing.

A relatively small sample size was obtained and was a convenience sample. Thus, the results of the study are limited in their generalizability.

Significance of the study for nursing

The results of this study substantiate the previous research relating the Stages of Adoption of

Exercise and Decisional Balance for Exercise. As in prior studies, individuals in the Maintenance stage have higher Decisional Balance score which indicates a more positive perception of exercise. Likewise, individuals with a lower Decisional Balance scores, or more negative perceptions of exercise, tend to fall into the stages of lesser activity - Precontemplation and Contemplation. Using this information, the primary care provider may be able to appropriately identify the proper method to motivate individuals to increase their level of activity.

The study showed no difference between the group of nurses and the non-nursing personnel. Despite the nurse's knowledge of illness and the impact of exercise on illness prevention, nurses have no more positive convictions toward exercise nor do they partake in exercise more than non-nurses. These findings clearly indicate a need to better educate nurses and nursing students in the benefits of exercise for both client and self.

Little progress has been made in addressing the challenge of increasing exercise initiation and maintenance (Marcus & Simkin, 1993). By applying the findings from this and similar studies, progress may be

made in developing programs to meet the needs of individuals in the various stages of exercise adoption. For example, those in the Precontemplation and Contemplation stages may increase their likelihood of beginning an exercise program if there is an increase in the appeal of physical activity.

As healthcare continues to recognize the importance of wellness activities and the benefits of exercise, it is important that methods be developed to move individuals into the Maintenance stage of Exercise Adoption. Healthcare providers must move from the predictive models used for recognizing those individuals most likely to exercise, to a process model that may aid in the understanding of behavior change.

If the most effective means by which nurses can teach others about the benefits of exercise is by role modeling, then it is imperative that nurses better understand the benefits and participate in an exercise program. If nursing education is lacking in the instruction on wellness behaviors and issues such as exercise counselling, then this component must be added to the nursing curriculum. To gain greater credibility, nurses need a theoretical background in wellness and exercise (Baily, 1985). The public is

increasingly aware of the need to live healthier and will demand information to assist in accomplishing this. It has been felt that nurses spend so much time on illness behavior that it may not be feasible to include this level of wellness teaching in undergraduate studies (Clark, 1986). Nurses and the nursing cirriculum must begin to focus on wellness and counselling of wellness activities.

Nurses often choose the nursing profession to take care of others and spend the rest of their professional career taking care of everyone but themselves. Webster (1985) defines wellness as an enthusiasm for living, feeling good about oneself, and having goals. Webster feels this results from a lifestyle consciously designed to realize one's highest potential for wholeness and well-being. Exercise is one method to improve posture, reduce depression, positively affect work performance, and enhance self-image and self-confidence (Clark, 1986). These are all important aspects in professional development for the nurse. When nurses feel good about themselves, then their ability to take good care of the patient is maximized.

Recommendations for further research

Further research is needed not only in the areas of Stages of Adoption of Exercise and Decisional Balance for Exercise, but also in the interventions for both. Once the Stage of Adoption of Exercise is identified, various interventions must be tested to move the individual from one stage to the next, until Maintenance is reached. The research previously completed indicates a correlation between the Stages of Adoption of Exercise and Decisional Balance. If the individual's response to the Pros and Cons of exercise is correlated to their actual participation in exercise, the key to moving individuals into the next Stage of Exercise may be through changing their Decisional Balance for Exercise. More research is needed to not only test this proposal but to also determine plausible interventions to change one's Decisional Balance.

Additional studies are needed using different settings and samples. These variations could include other healthcare facilities and other healthcare professions such as physical therapists and physicians. Different settings such as schools and various industry should be explored to determine those which are

conducive to exercise promotion. Additionally, studies should be conducted in settings with a variety of population size.

Additional reliability studies are needed on the Stages of Adoption of Exercise. The Stages of Adoption of Exercise could offer more definitive information if the actual exercise levels could be assess through physiologic studies.

The demographic tool should be adjusted to better define education levels. This could be accomplished by including the number of years of education used to define each category.

Further investigation is needed into the presence or absence of wellness in the nursing curriculum. If wellness is present, the content and theory base of what is taught must be evaluated. To be educators of wellness and exercise, nurses must have a theoretical foundation from which to build.

Summary

As the focus of healthcare continues to recognize the importance of wellness and exercise, nurses must take a lead in education and participation. As role models, nurses must demonstrate the understanding of the benefits of exercise and the commitment to

participate. As seen in this study, nurses do not have stronger beliefs in the benefits of exercise nor do they participate at a higher rate than non-nurses. This study did, however, demonstrate that a strong belief in the benefits of exercise is associated with the actual stage of participation. Nurses can and do have a direct impact on the individual's beliefs regarding exercise. It is imperative that nurses understand these benefits and the influence they possess on motivating others to exercise.

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APPENDIX A

GREENE COUNTY MEDICAL CENTER
1000 West Lincolnway
Jefferson, Iowa 50129
515-386-2114

GCMC

"Friends and Neighbors Caring For You"

8 June, 1994

Dear GCMC Employee,

You are invited to participate in a research study regarding exercise being conducted by Rochelle Guess, graduate student at Drake University Department of Nursing. The study involves your completion of the enclosed questionnaire.

All information from the study will be kept confidential. Only the researcher will have access to the coding system. The information presented from the study will be presented collectively, not individually.

As an employee, you are not required to participate but participation would be appreciated. If you choose not to participate, this will not in any way, affect your employment status.

Please take a few moments to complete the questionnaire and return it to the locked box marked "exercise questionnaire return" in the cafeteria before June 16. Return of this questionnaire will imply your consent to participate in this study.

Thank you for you time and willingness to assist in this research project. If you have any questions regarding the questionnaire or the project, please contact Rochelle Guess (Extension 103) or Mary Hansen, Ph.D., R.N., Drake University (515-271-2830).

Thank you for your time and willingness to participate.

Sincerely,

Karen Bossard

Karen Bossard, MPH, RN
Administrator

GREENE COUNTY MEDICAL CENTER
1000 West Lincolnway
Jefferson, Iowa 50129
Phone: 515-386-2114
Fax: 515-386-3695

GCMC

"Friends and Neighbors Caring For You"

22 June, 1994

Dear GCMC Employee,

With your last paycheck you received a questionnaire regarding exercise. To get accurate results for this study your participation is needed.

Please take a few moments to complete the enclosed questionnaire and return it to the box in the cafeteria.

Once again, thank you for your participation in this study.

Sincerely,

Karen Bossard

Karen Bossard, RN, MPH
Administrator

APPENDIX B

QUESTIONNAIRE

SECTION I:

Physical activity or exercise includes activities such as brisk walking, jogging, swimming, aerobic dancing, biking, rowing, etc. Activities that are primarily sedentary, such as bowling or playing golf with a golf cart, would not be considered exercise.

REGULAR EXERCISE = 3 TIMES OR MORE PER WEEK FOR 20 MINUTES OR LONGER EACH TIME.

Please read the following statements and circle True or False to all items.

Items:

1. I currently do not exercise.	TRUE	FALSE
2. I intend to exercise in the next 6 months.	TRUE	FALSE
3. I currently exercise regularly.	TRUE	FALSE
4. I have exercised regularly for the past 6 months.	TRUE	FALSE
5. I have exercised regularly in the past for a period of at least 3 months.	TRUE	FALSE

SECTION II:

Please rate how important each of these statements is in your decision whether or not to exercise. In each case, think about how you feel right not, not how you have felt in the past or would like to feel.

	Not at all Important		Moderately Important		Extremely Important
1. I would have more energy for my family and friends if I exercised regularly.	1	2	3	4	5

	Not at all Important		Moderately Important		Extremely Important
2. Regular exercise would help me relieve tension.	1	2	3	4	5
3. I think I would be too tired to do my daily work after exercising.	1	2	3	4	5
4. I would feel more confident if I exercised regularly.	1	2	3	4	5
5. I would sleep more soundly if I exercised regularly.	1	2	3	4	5
6. I would feel good about myself if I kept my commitment to exercise regularly.	1	2	3	4	5
7. I would find it difficult to find an exercise activity that I enjoy that is not affected by bad weather.	1	2	3	4	5
8. I would like my body better if I exercised regularly.	1	2	3	4	5
9. It would be easier for me perform routine physical tasks if I exercised regularly.	1	2	3	4	5
10. I would feel less stressed if I exercised regularly.	1	2	3	4	5

	Not At All Important				Extremely Important
11. I feel uncomfortable when I exercise because I get out of breath and my heart beats very fast.	1	2	3	4	5
12. I would feel more comfortable with my body if I exercised regularly.	1	2	3	4	5
13. Regular exercise would take too much of my time.	1	2	3	4	5
14. Regular exercise would help me have a more positive outlook on life.	1	2	3	4	5
15. I would have less time for my family and friends if I exercised regularly.	1	2	3	4	5
16. At the end of the day, I am too exhausted to exercise.	1	2	3	4	5

SECTION III:

Please circle the appropriate response to the following questions.

Your position: (Circle your answer)

1 Nurse (RN or LPN)
2 Non-nurse

Your sex: (Circle your answer)

1 MALE
2 FEMALE

Your present age: (Circle your answer)

1 18 - 25 years old
2 26 - 35 years old
3 36 - 45 years old
4 46 - 55 years old
5 56 - 65 years old
6 Over 65 years

Your highest level of education completed: (Circle your answer)

1 NO FORMAL EDUCATION

2 SOME GRADE SCHOOL

3 COMPLETED GRADE SCHOOL

4 SOME HIGH SCHOOL

5 COMPLETED HIGH SCHOOL

6 SOME COLLEGE

7 COMPLETED COLLEGE (specify major) _____

8 SOME GRADUATE WORK

9 A GRADUATE DEGREE (specify major and degree) _____

THE MIRIAM HOSPITAL

March 8, 1994

Rochelle Guezz
Greene County Medical Center
1000 West Lincolnway
Jefferson, Iowa 50129

Dear Rochelle,

You have my permission to use the Stages of Change Questionnaire and the Decisional Balance Questionnaire.

If you have any further questions, please do not hesitate to call me.

Sincerely,

Bess H. Marcus, Ph.D.
Assistant Professor of Psychiatry
and Human Behavior

Member:
Council of Teaching Hospitals
Association of American Medical Colleges

APPENDIX C

To be completed by the Investigator:

Date Submitted: 6/8/94

Proposal Title: A Comparison of Stages of Adoption of Exercise and Decisional Balance for Exercise in Nurses and Non-nurses

Investigator: Rochelle Guess

Faculty research advisor: (for student research): Mary Hansen

Return to: Rochelle Guess
Name

RR 2 Box 117
Street Address or Campus Office

Scranton, IA 51462
City, State, Zip if off campus

To be completed by the Human Subjects Research Review Committee Chairperson:

Date Received: 6-20-94

Decision:

✓ Approval, no risk

____ Approval, minimal risk

____ Approval, subjects at risk, but benefits outweigh risks

____ No approval. Subjects at risk or proposal does not adequately address risks, benefits and procedures.

Reasons for Disapproval: _____

Suggested Changes: _____

Human Subjects Review Committee Chair: Steven F. Faux (1992-1993)
Kaun Conner

Date: 7-5-94

APPENDIX D

GREENE COUNTY MEDICAL CENTER
1000 West Lincolnway
Jefferson, Iowa 50129
515-386-2114

GCMC

"Friends and Neighbors Caring For You"

CONSENT TO DISTRIBUTE QUESTIONNAIRE

Rochelle Guess has my permission to distribute her wellness questionnaire to Greene County Medical Center employees. It is my understanding that this questionnaire is a part of her thesis and will be used for the purpose of data gathering.

Karen Bossard

Karen Bossard, Administrator

APPENDIX E

Department/Job Classification Coding

Administration	A
Administrative Assistants	S
Cheif Financial Officer	
Business Office	B
Accounts Payable	B
Computer Operator	B
Insurance Clerk	B
Receptionist	B
Staff Accountant	B
Cardiopulmonary	R
RT Director	DD
Respiratory Therapist	R
Eldercare	EL
Eldercare Services	EL
Engineering	E
Engineering Director	DD
Engineering	E
Housekeeping/Laundry	H
Housekeeping Director	DD
Housekeeping	H
Laundry	L
Human Resources	R
HR Director	DD
Payroll Clerk	PC
Laboratory	L
Laboratory Director	DD
Laboratory Tech	LT
Long Term Care	LT
LTC Director	DD
Activities	A
CNA	C
Licensed Practical Nurse	LP
Registered Nurse	R
Unit Secretary	U

Medical Records	M
MR Director	DD
Transcriptionist	M
Nursing	N
Nursing Director	DD
CNA	C
Licensed Practical Nurse	LP
Registered Nurse	R
Unit Secretaries	U
Nutritional Services	D
Dietician	D
Dietary Aid	D
Cook	D
Pharmacy	Ph
Pharmacist	Ph
Pharmacy Tech	PhT
Physical Therapy	P
Physical Therapist	P
Physical Therapy Tech	PT
Physical Therapy Aid	PA
Public Health	HH
PH Director	DD
Home Health Aids	HH
Homemaker Aids	HH
Registered Nurse	R
Secretary	S
Purchasing	Pu
Purchasing Director	DD
Purchasing Clerk	P
Radiology	X
Radiology Director	DD
Radiology Tech	XT

Surgery	O
OR Director	DD
Anesthetist	AN
Registered Nurse	R
OR Tech	OT

APPENDIX F

APPENDIX F

Raw Decisional Balance, Pros, & Cons Scores

Non-nurses

Pros	Cons	Decisional Balance
49.62	47.52	2.11
55.17	61.49	-6.32
54.38	41.69	12.69
51.43	41.98	9.45
53.26	44.68	8.58
54.38	51.90	2.48
33.32	43.83	-10.51
33 92	56.07	-16.15
40.33	58.88	-18.55
43.73	56.07	-12.34
41.86	44.38	-2.53
47.67	53.04	-5.37
48.59	54.66	-6.07
60.88	57.52	3.35
47.40	57.53	-10.13
46.03	53.71	-7.68
56.05	60.05	-3.99
48.61	54.59	-5.98
55.33	46.02	9.31
56.63	44.75	11.89
46.64	50.45	-3.81
50.51	48.90	1.61
57.03	46.16	10.87
45.97	54.96	-8.99
58.75	64.67	-5.89
56.05	44.42	11.64
57.06	57.16	-.09
60.88	49.73	11.14
51.37	46.1	5.26
47.46	51.80	-4.34
59.83	38.99	21.88
51.31	55.97	-4.66
51.29	47.47	3.82
52.20	38.63	13.57
52.44	56.11	-3.67
54.64	41.69	12.96
54.46	47.18	7.27
43.33	43.43	-.10

49.85	44.52	5.33
61.18	51.63	9.55
50.48	43.23	7.25
55.93	58.87	-2.94
40.82	44.84	-4.01
48.59	44.84	3.75
47.71	50.50	-2.78
51.37	38.99	12.37
60.88	38.99	21.88
60.88	55.26	5.61
57.98	46.18	11.80
49.25	55.97	-6.73
51.37	55.62	-4.25

APPENDIX G

APPENDIX G

Raw Scores for Decisional Balance, Pros, & Cons for Nurse Subsample

Nurses		
Pro	Con	Decisional Balance
34.14	50.29	-16.25
22.84	72.95	-50.11
32.62	41.94	-9.32
33.36	49.11	-15.75
24.76	47.54	-22.77
44.82	48.86	-4.04
60.88	52.79	8.08
36.41	55.89	-20.77
43.75	57.41	-13.66
46.65	54.67	-8.01
47.03	43.33	3.70
34.37	57.35	-22.98
48.59	60.32	-11.73
43.72	46.18	-2.47
39.88	54.63	-14.75
51.21	58.67	-7.46
50.33	51.99	-1.66
53.40	46.20	7.20
49.57	48.83	.74
55.13	43.04	12.09
47.66	48.80	-1.13
53.19	48.84	4.35
42.82	52.12	-9.30
55.33	47.33	8.00
46.81	48.02	-1.02
56.04	50.27	5.77
60.88	50.34	10.53
49.60	48.89	0.72
51.74	47.66	4.08
51.37	41.68	9.69

51.32	48.91	2.41
57.98	44.46	13.52
53.39	41.69	11.70
40.58	43.43	-2.85
60.88	61.77	-.90
60.88	41.69	19.19
60.88	38.99	21.88
59.83	51.75	8.08
49.48	50.21	-.73
60.88	44.76	16.11